

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

THIS PAGE BLANK (USPTO)

PCT

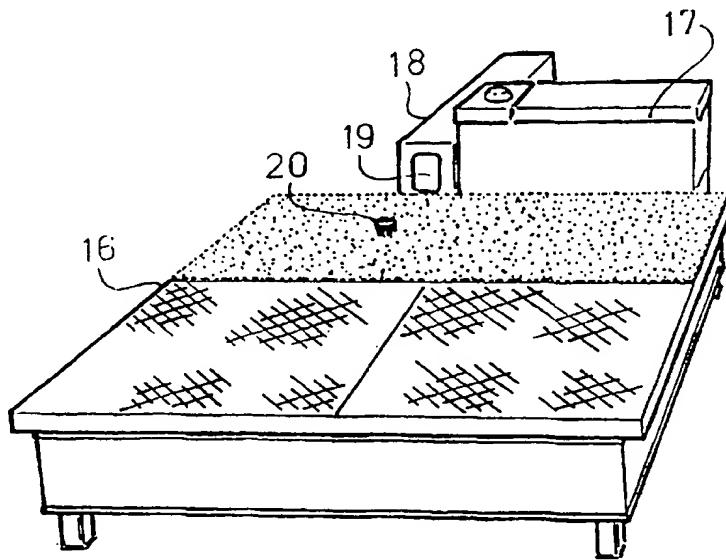
WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A63B 57/00	A1	(11) International Publication Number: WO 95/07118 (43) International Publication Date: 16 March 1995 (16.03.95)
(21) International Application Number: PCT/SE94/00830	(81) Designated States: AU, JP, NZ, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(22) International Filing Date: 6 September 1994 (06.09.94)		
(30) Priority Data: 9302864-5 6 September 1993 (06.09.93) SE	Published <i>With international search report.</i> <i>With amended claims.</i> <i>In English translation (filed in Swedish).</i>	
(71)(72) Applicant and Inventor: SVENSSON, Leif [SE/SE]; Cirkelvägen 44, S-552 75 Jönköping (SE).		
(74) Agent: ARWIDI, Bengt; Ahlpatent AB, Förborgsgatan 27, S-554 39 Jönköping (SE).		

(54) Title: DEVICE FOR PLAYING AND TRAINING OF GOLF



(57) Abstract

The present invention relates to a golf game and training apparatus. The invention is especially concerned with the teeing of golf balls in striking position. A device for training of golf according to the invention includes as main elements a platform with a ball reservoir and a ball feeding mechanism. This device is as follows, described with reference to the drawings. The training device includes as main elements a platform (16) with a ball reservoir (17) and in a box (18) enclosed ball feeding mechanism. The balls are placed in striking position (20) by an arm which passes through the opening (19) in the box (18).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

DEVICE FOR PLAYING AND TRAINING OF GOLF

The present invention is for a device for playing and training of golf. The invention is especially concerned with the positioning of golf balls in a position for striking in connection herewith. When training golf it is common that the person who is training is standing at the same position and strikes a great number of balls out onto a range. For this purpose one often uses a special striking place which can be a raised platform, where the ball is put on to some kind of mat, but a similar training can also be done on a lawn. The ball may also be placed onto a so-called peg in order to be somewhat above the surface, which corresponds to the situation of striking out from a tee. By this kind of training it is often desirable that the person who is training shall be able to strike many balls without a change of position and that the balls shall be in exactly the same position for every strike. It can also be desirable that the person who is training shall be able to strike all the balls without changing the position of his feet. In order to meet these requirements, it is necessary that the balls are positioned for striking by an automatic device. The present invention is for such a device. When the balls are positioned they may either be kept until they are positioned for striking and thereafter released or alternatively be released from a position above the position for striking and fall down thereto. In this case the balls must be caught and stopped without rolling or dropping to the side. The present invention is for a peg device for positioning of golf balls and meets these requirements. A peg according to the invention can be used also for playing of golf in general.

A device for training of golf according to the invention comprises as a basic element a platform including a hopper for the balls and a feeding mechanism for balls. This device and the above mentioned peg device will below be more closely described by the embodiment shown in the figures.

Figure 1 shows a training device according to the invention.

Figure 2 shows the device for feeding of balls to the position for striking in a side view.

Figure 3 shows the device of figure 2 from above.

Figure 4 shows the peg device and parts of the device of figure 2.

Figure 5 shows the peg in a side view.

Figure 6 shows the peg of figure 5 from above.

The training device as shown in figure 1 comprises as its basic elements a platform 16 with a ball hopper 17 and a feeding device for golf balls which is enclosed in a box 18. The balls are placed in a position 20 for striking by an arm which passes through the opening 19 in the box 18.

The feeding mechanism and the parts connected therewith are shown in figures 2 and 3. Essentially the mechanism comprises a cylinder 9 and a plate 1 which is parallel with the cylinder and connected to its plunger. In the outer end of the plate close to the fastening for the plunger there is a device for gripping, holding and releasing golf balls. The balls are lifted up to this device by a support 8 which can be raised and lowered by means of a cylinder 13. The holding device comprises two pins 11 which protrude downwards from the plate 1 and a movable holding plate 25 which protrudes downwards from the plate 1 parallel with the pins 11 and which can be turned around an axis 12. The movements of the holding plate are obtained by a cylinder 10 which is fastened on to the plate 1 and follows the movements thereof.

The functioning of the device is in principle as follows:

Balls 15 are supplied from the ball hopper 17 along a ball track 26. Hereby the balls one at a time arrive at the ball support 8. From here the balls are lifted up to the holding position by means of the cylinder 13, where the ball is clamped between the pins 11 and the movable holder 25. The holding plate 25 can be turned around the axis 12 and is by means of an arm 7 connected with the cylinder 10. When the ball has been clamped in the holding device it is moved out through the opening 19 by means of the cylinder 9 to a position above the striking position. Here the cylinder 10 is activated so that the movable holding plate 25 turns around the axis 12 and the ball 15 is released and drops down to the striking position. Thereupon the arm returns to its starting position.

In order to avoid that consecutive balls disturb the function of the device when a ball is lifted by the ball support 8, there is adjacent to the ball track 26 a blocking arm 27. This cooperates with the ball support 8 in such a way that only one ball at a time is fed to the support.

In the striking position the ball is placed on a peg device comprising a support 20, a bottom plate 22 and a downwardly protruding pin 23. The support can be made in different ways and preferably comprises a brush device, as is described more in detail below. The pin 23 of the peg is supported by an eccentric disk 21 which can be turned around an eccentrically arranged rotational axis 24. By this device the height of the peg over the platform can be adjusted and thus also the position of the ball relative to the platform.

The function and setting of the device can be affected in different ways. Preferably the cylinders are pneumatic and for its functioning the device only requires connection to a suitable source of pressurized air. The function of feeding another ball can be initiated either automatically by means of some kind of sensor for presence or absence of a ball in the striking position. The function can also be initiated e.g.

by means of a suitably positioned push-button which can be actuated by a person using the device e.g. by means of a golf-club.

A peg according to the invention is shown more in detail in figures 5 and 6. As can be seen from these figures the device includes a plate 22, onto which wires are mounted which together form a brushlike device and also a downwardly protruding pin 23.

The brush of the peg is formed by a number of groups of wires, outer groups 28, which form a circle around inner groups 29, whereby the latter have a lower height over the bottom plate 22 than the outer groups 28. The upper ends of the wires in this way together form a bowl-like surface. The advantages of such a peg device are that a ball which is dropped onto the device does not have any tendency to bounce and that by the outer somewhat longer wires it is directed into the centre of the peg. There is thus no risk that a ball which is dropped onto the peg shall bounce and drop to the side and balls which are released from a point which is not exactly over the centre of the peg will anyway stop in the correct position.

A peg of the kind described above can be made in many different ways and from different materials. It has been found that the brushes are suitably made of wires of nylon 612. The diameter of the wires is preferably about 0.2 mm. The outer diameter of the outer ring of the brush is suitably 25 - 30 mm and its height over the bottom plate 22 is about 30 mm. The inner wires should have a height which is about 5 mm less than the height of the outer wires. In the preferred embodiment shown in the figure of the peg according to the invention the wires are gathered in groups with relatively large spacing. Within the scope of the invention the design in this respect may be varied within wide limits. It is also possible to use other materials but different kinds of polymers should be a first choice. With such materials there is also a possibility to cast the wires as

one piece with the bottom plate.

The peg device shown in the Figure is intended to be used together with the above described device for automatic positioning of golf balls from a ball hopper. However, the invention may also be used for pegs for use at regular golf game. The downwardly protruding thick pin 23 may then be substituted for by several smaller pins intended to be pushed into the ground. The peg may also be made so that the bottom plate 22 is its lower end which may than be for mounting in a holder which in turn is positioned on the ground or other place, i.e. a tee.

CLAIMS

- 1) Device for positioning of golf balls from a ball hopper in a position for striking, characterized in that it comprises a straightly, essentially horizontally movable holding device for a golf ball, a device for supplying from below one ball at a time from the ball hopper to the holding device, means for straightly moving the holding device to a position where the ball is just above the striking positon and means to release the ball so that it will drop down and stop in the striking position, whereupon the holding device is returned to its starting position.
- 2) Device according to claim 1, characterized therein that the ball in its striking position is carried by flexible wires arranged vertically like a brush, the upper ends of which form a surface which carries the ball.
- 3) Peg for positioning of golf balls in striking position, characterized therein that it comprises several flexible vertical wires arranged like a brush, the upper ends of which form a surface for carrying of a ball.
- 4) Peg according to claim 3, characterized therein that the wires are arranged in several smaller groups.
- 5) Peg according to any of claims 3-4, characterized therein that the outer wires are somewhat longer than the inner wires so that the upper ends of the wires form a bowl-like surface.
- 6) Peg according to any of claims 3-5, characterized therein that the wires are made from polymer material.
- 7) Peg according to claims 3-5, characterized therein that the wires are made as one piece with a bottom plate.

AMENDED CLAIMS

[received by the International Bureau on 31 January 1995 (31.01.95);
original claims 1-7 replaced by new claims 1 and 2 (1 page)]

- 1) Device for teeing of golf balls from a ball hopper having a straightly, essentially horizontally movable holding device for a golf ball, characterized in that it comprises a device for supplying from below one ball at a time from the ball hopper to the holding device, means for straightly moving the holding device to a position, where the ball is just above the striking positon, and means to release the ball so that it will drop down and stop in the striking position, whereupon the holding device is returned to its starting position and the ball in its striking position is carried by flexible wires arranged vertically like a brush, the upper ends of which form a surface which carries the ball, the outer wires being somewhat longer than the inner wires.
- 2) Device according to claim 1, characterized therein that the wires are made as one piece with a bottom plate.

1/5

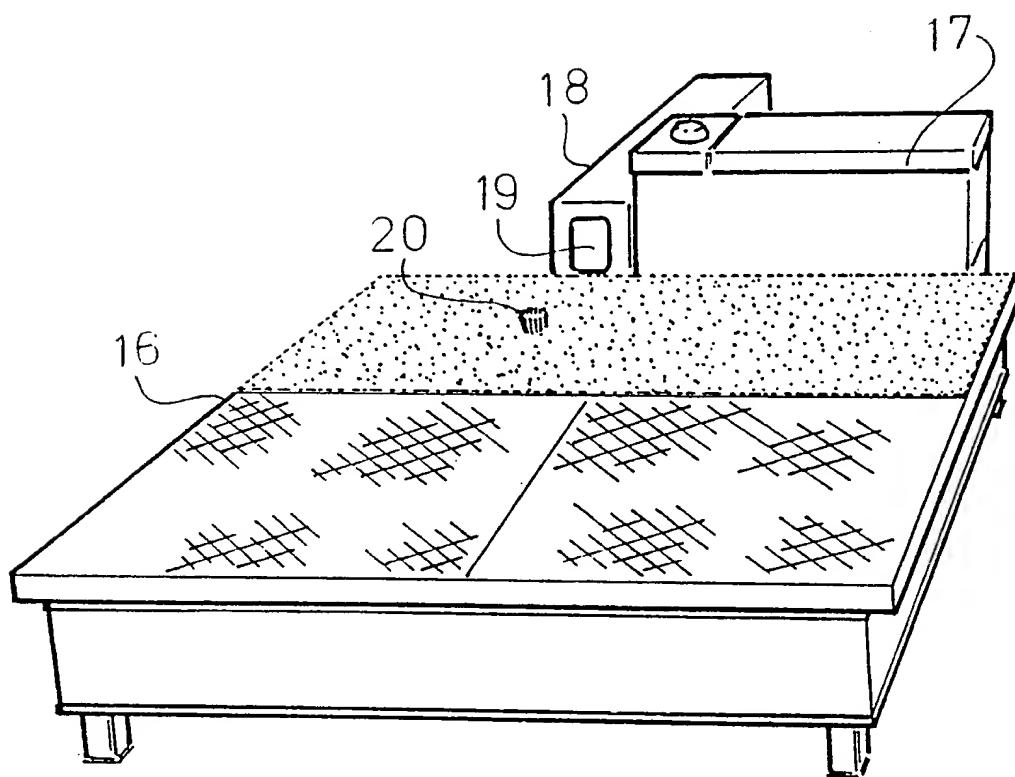


Fig 1

SUBSTITUTE SHEET

2/5

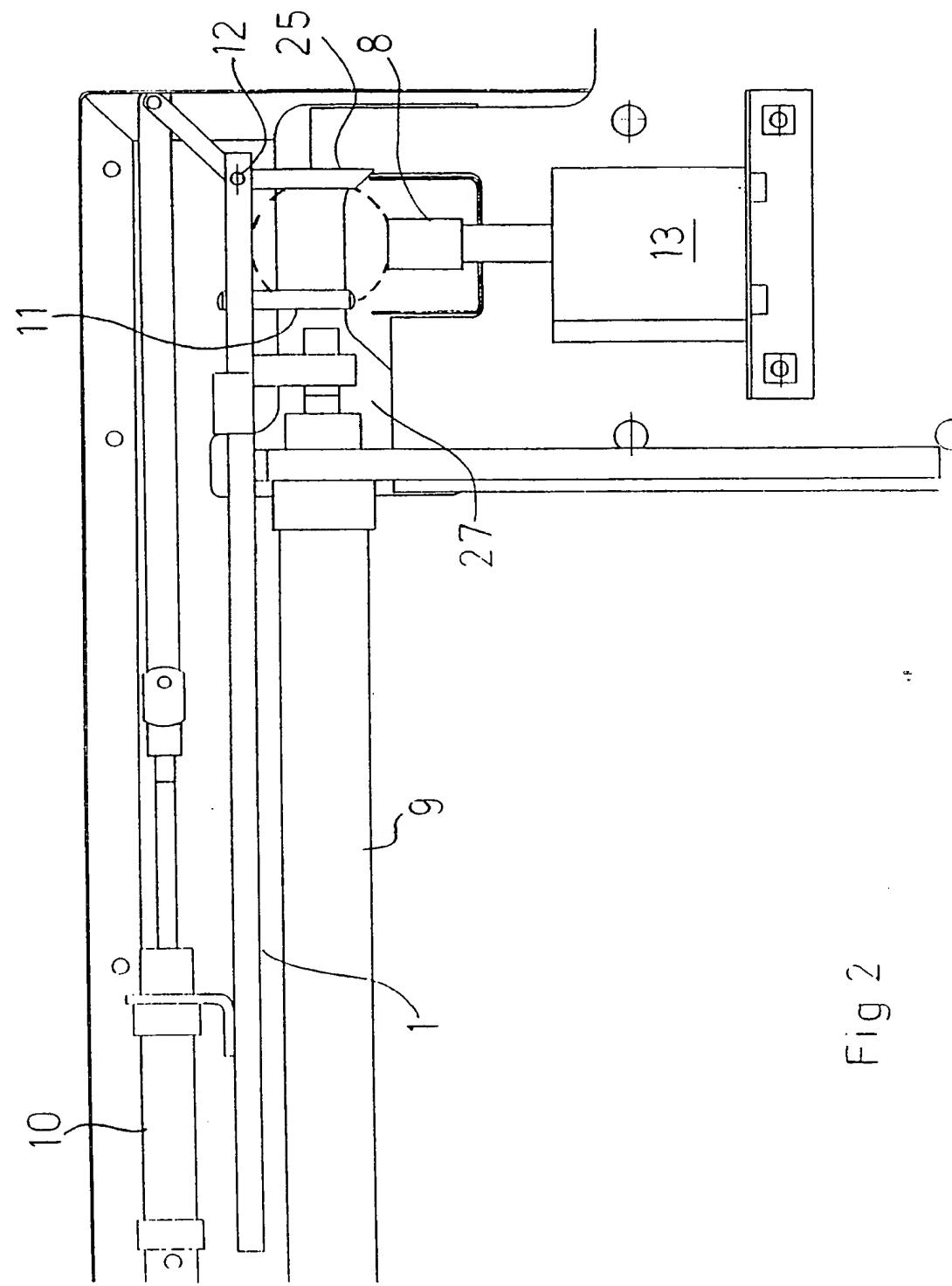
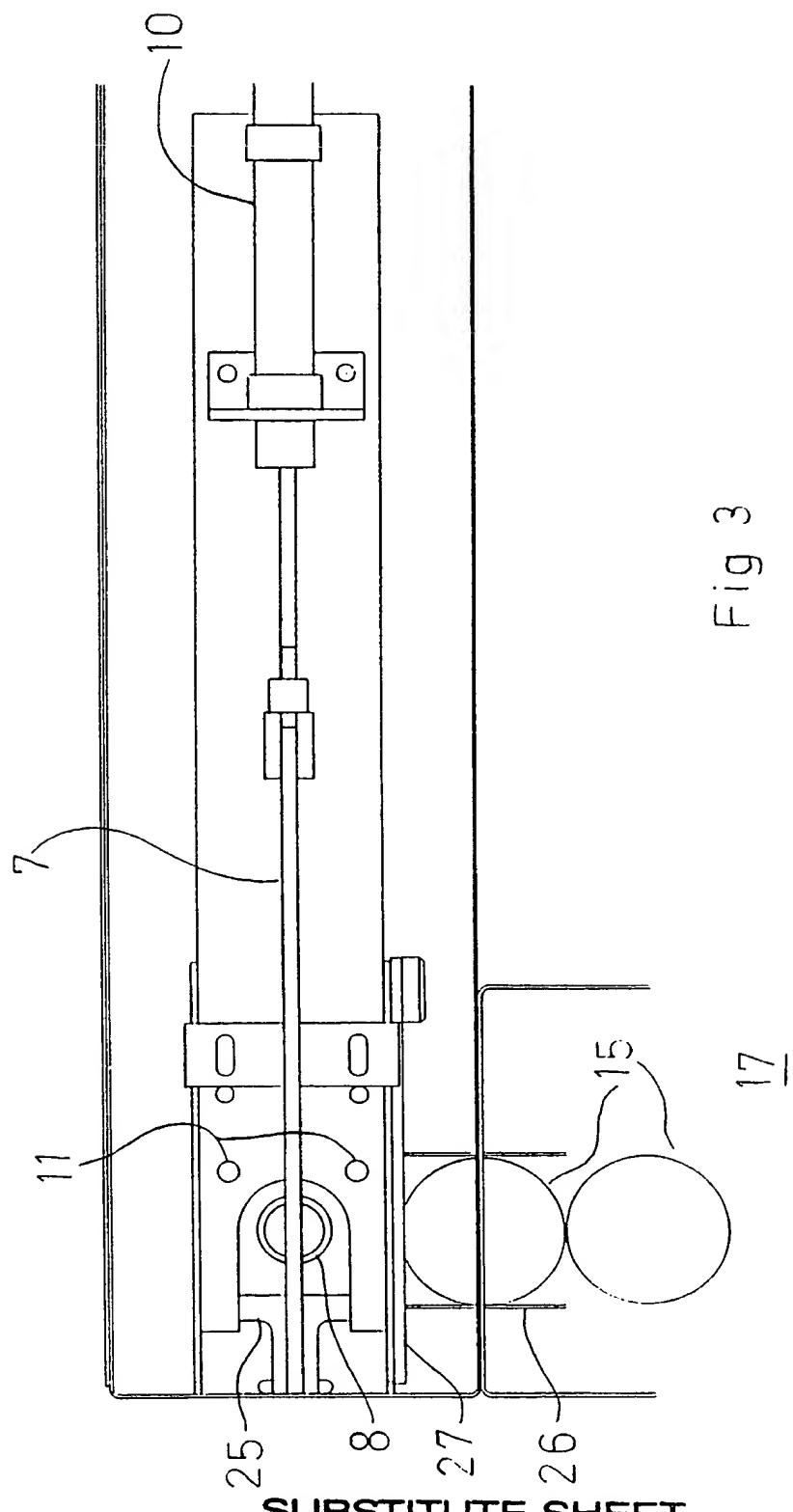


Fig 2

SUBSTITUTE SHEET

3 / 5

**SUBSTITUTE SHEET**

4/5

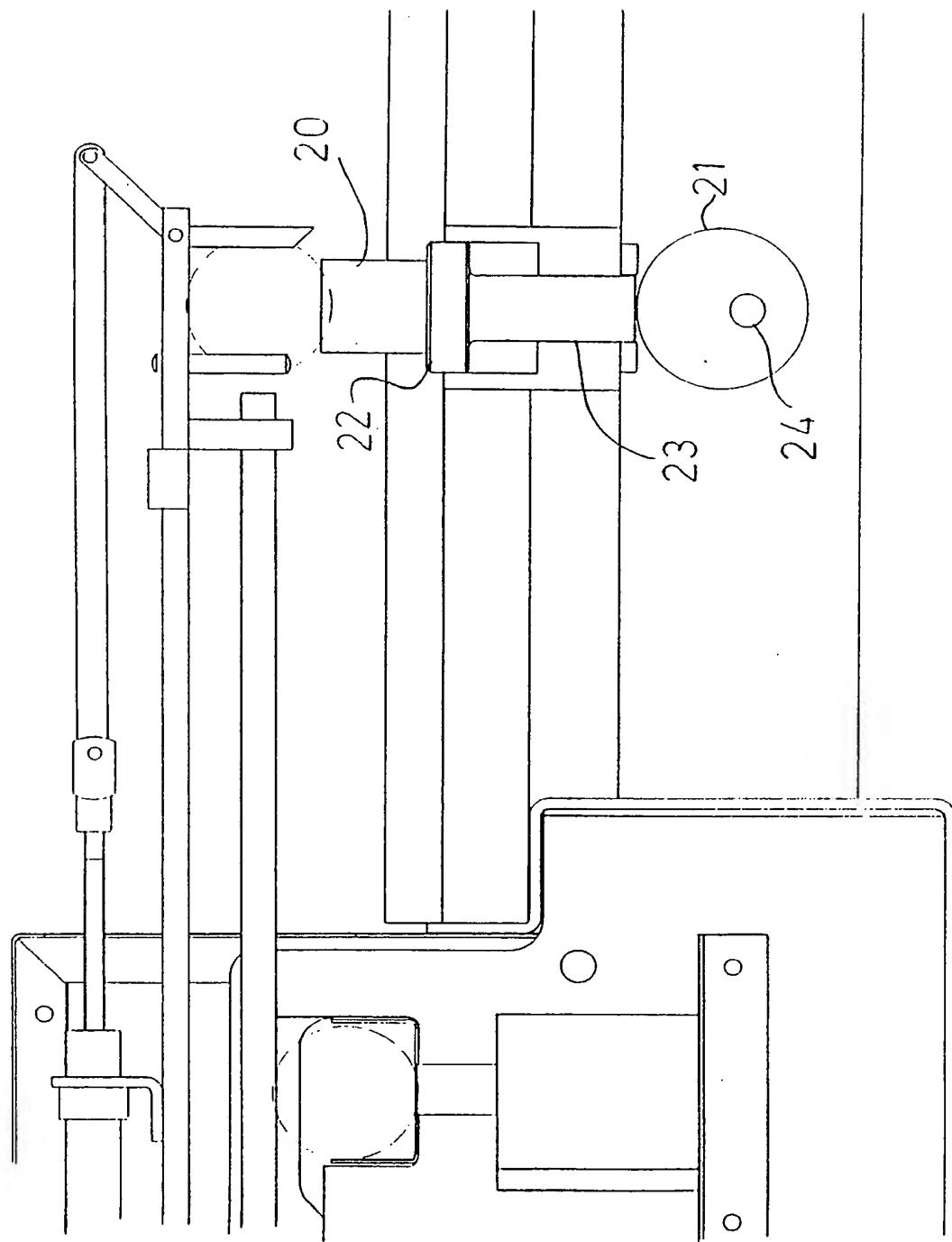


Fig 4

SUBSTITUTE SHEET

5/5

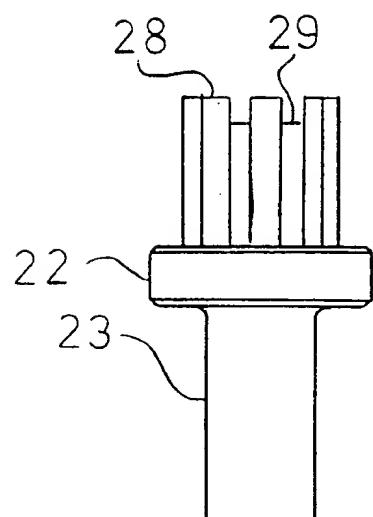


Fig 5

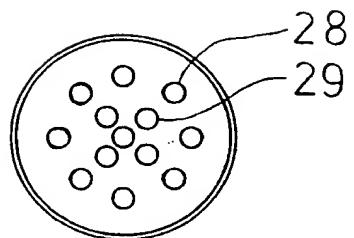


Fig 6

SUBSTITUTE SHEET

INTERNATIONAL SEARCH REPORT

1

International application No.

PCT/SE 94/00830

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A63B 57/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A63B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4817955 (D.N. HICKSON ET AL), 4 April 1989 (04.04.89), page 7, line 8 - page 8, line 18; page 11, line 6 - line 14, figures 2,3	1
Y	---	2
X	GB, A, 2258161 (MICHAEL JOHN ST JOHN), 3 February 1993 (03.02.93), page 7, line 28 - page 8, line 18; page 11, line 6 - line 14, figures 2,3	3-7
Y	---	2

Further documents are listed in the continuation of Box C.

See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed
- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

12 December 1994

Date of mailing of the international search report

21-12-1994

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. + 46 8 666 02 86

Authorized officer

Johan Löfstedt
Telephone No. + 46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 94/00830

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet).

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Invention A = claims 1-2 Automatic teeing device

Invention B = claims 3-7 Golf peg

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.



No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

26/11/94

International application No.

PCT/SE 94/00830

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4817955	04/04/89	NONE	
GB-A- 2258161	03/02/93	NONE	

THIS PAGE BLANK (USPTO)